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Difference between rtk and static gps

Difference between gps and rtk. Rtk gps explained. Static vs rtk gps. How does rtk gps work.

RTK vs Post Processing: Can You Get Similar Results Without RTK? The user is wondering why they can't use a similar method to solve the baseline with 5 seconds of post-processing like RTK does. RTK uses nearby GPS coordinates that have already been resolved, and it can provide a position based on few GPS observations from satellites. However, this requires observing RTK points at least three times to get an accurate result. If RTK is not available, the user wants to know if they can achieve similar results by practicing static calculations for each point required, using logging in under a minute for each point. They are asking about post-processing kinematic survey and what type of processing software they should use. Your rover's data collection interval might be 0.1 seconds apart, but that doesn't necessarily mean it's the default for storing data. Typically, OPUS and OPUS-RS data are collected at 30-second epochs, which is why a 15-minute observation is required. Your Rover may have raw data storage at intervals ranging from 1 to 30 seconds, with shorter intervals requiring less overall time to store. A suggested interval range is 1-5 minutes. To provide a more detailed answer, we need more information. When using RTK, you stand on a given point for no longer than 5 seconds and can instantly take a shot. However, when recording a static log file on both the base and the rover, you need to stay at least 15 minutes (depending on the baseline) to achieve an accurate solution. This is because RTK tracks satellites in real-time, whereas static post-processing requires more time to ensure accuracy. I think of RTK as a live post-processing procedure where the base broadcasts corrections on the fly. So, why can't we solve the baseline with 5 seconds in the same way through post-processing? The answer lies in the difference between tracking satellites and recording a static log file. With RTK, you're working with a continuous data stream, whereas with static post-processing, there is no initial stream to "fix" as you walk up to the point. In summary, RTK works by tracking satellites in real-time, which allows it to achieve accurate solutions quickly. Static post-processing, on the other hand, requires more time and processing power to ensure accuracy. This is why a 15-minute observation is often necessary for static post-processing. What your rover can do includes storing raw field observations for later processing outside its capabilities. For RTK, it might record data at 0.1-second intervals, whereas typical OPUS and OPUS-RS data is collected every 30 seconds. Your Rover's storage interval could be as short as 1 second to 5 minutes or more. To answer your question, we need more information. You operate in Europe, so OPUS isn't an option. You use a self-established base on a known rooftop point and send corrections directly. Since you have unlimited access to the base, you wonder why you can't solve the baseline with PPK and get things done. Short static baselines are typically resolved with small data sets. There are limitations to single-base stations that require longer occupations. OPUS has multiple base advantages, while OPUS-RS offers better atmospheric condition interpretation using surrounding bases, reducing processing time. How large is your island? To check yourself, establish fixed points near the limits and use them for RTK base observations. The key to RTK is a nearby base with minimal atmospheric changes between measurements. When recording static log files, you need at least 15 minutes (dependent on the baseline) for an accurate solution. I view RTK as a live post-processing procedure where the base broadcasts corrections on the fly. You might wonder why static post-processing takes longer. I believe the difference lies in how RTK and static processing handle satellite data streams. With RTK, you're essentially taking a small sample from a continuous stream, whereas with static processing, you start from scratch each time. RTK works quickly, often in 5 seconds, while static processing can take up to 15 minutes. The reason for this disparity lies in the way RTK handles ionosphere delay, which requires longer computation times. For short baselines, however, RTK and PPK (Post-Processed Kinematic) may not differ significantly. There's a recent paper published in the ASCE Journal of Engineering Surveying that explores the accuracy and occupation time differences between static and RTK methods. The authors also provide an earlier version of their research as part of one author's Master's Thesis. It's worth noting that PPK can be used to locate points without requiring radio signals for a RTK session. You don't need to occupy the points for extended periods to achieve similar accuracy levels. PPK and RTK are essentially equivalent, with the main difference being the location where the calculations take place – office or field. The various methods (PPK, RTK, Rapid Static, Static, Fast Static) share a common goal: processing satellite data. The differences lie in the procedures involved, rather than any mysterious process. With RTK and PPK, the time it takes to get fixed is crucial. Traditionally, for PPK, 8 minutes were allowed to fix up when having four or more sats in view. I've revised this to 3 minutes and have never encountered any issues. For one-shot fixes, you'd need three minutes plus the point's fixing time. If the base is close (under 10 km), treat it like a RTK shot. For longer shots over 10 miles, use ten minutes plus one minute per mile as a rule of thumb. One advantage of PPK is that once fixed, you can leave it fixed and work all day long or until lock is lost. You'd then need to re-fix for three minutes. So, fix in three minutes, locate 10 points at your preferred comfort level, or even do continuous topo in PPK. Some users have a setting that puts a minimum time for single PPK shots at 2 minutes; however, I usually keep it open-ended. The 'K' in RTK and PPK stands for kinematic, allowing you to collect data on the move with both systems. While most use RTK as real-time static and PPK as post-processed static, you can move while collecting PPK if desired. For a PPK-style, I personally set 5 seconds for data collection, but you can adjust this as needed. When taking topo shots, ensure at least three epochs are met to give the shot at least 15 seconds; I usually provide 45 or more seconds. For topographic work, collecting at either 1-second or 5-second intervals is recommended at both the base and rover for synchronization purposes. Always have good open sky for optimal results; under trees can cause issues that may not become apparent until processing. Collecting PPK in the DC (data collector) rather than directly in the receiver tends to have fewer issues. Give it a try; collect points in your parking lot using both RTK and PPK methods. The difference will be noticeable, making you a fan of PPK's efficiency.